

Gerardia purpurea L., var. *paupercula* Gray.—This very variable species was abundant in the grassy beach of Irving Chase lake where it occurred together with *Lobelia Kalmii* and *L. syphilitica*. The *Gerardia* presented constantly an unusually colored corolla. The general hue was light rose purple, but the interior of the upper lip was blotched with dark crimson and orange, while both lips were slightly bearded.

Spiranthes Romanzoffiana Chamisso.—A rare plant in Minnesota. Found in a Brainerd bog, associated with *Habenaria hyperborea*, *Chelone glabra* and *Campanula aparinoides*.

A great variety of sedges was noted in the forest-lake region west of Gull lake. Almost every pond has some form growing abundantly along its shores which is sparingly represented at neighboring ponds or entirely absent. Of these, however, the study is incomplete as yet.

Minneapolis, Minn.

Station botanists at Champaign.

BYRON D. HALSTED, SECRETARY.

The station botanists were not out in full force at the Champaign meeting of the Association of Agricultural Colleges and Experiment Stations, but there was no lack of subjects to consider or topics to discuss; in fact, the time assigned to the meetings of the section was all too short, and some of the papers sent were unread and several others passed without the discussion that otherwise would have followed. It may be said in passing, that the sections made their lack of time known and as a result another full day for the station workers has been added to the next annual meeting. This will relieve matters greatly and make these meetings more than ever valuable to the station botanists.

Dr. J. C. Arthur was the first upon the programme with a paper upon "Reference books, how to use and obtain them." The importance of looking up any proposed subject for investigation was emphasized, for it often happens that a point thought to be new is in reality an old one. In preparing a bulletin it is sometimes best to treat it historically, the citations being given in small type foot notes. These notes, while they occupy small space and do not inconvenience the general reader, are of great service to all who desire to pur-

sue the subject further, while they in fact, give weight to what is printed above, even to the cursory reader.

As to methods of obtaining books of reference it was thought best to buy for the most part, and rely upon borrowing only when other sources fail. To obtain the books second-hand catalogues should be resorted to. It was suggested that the books of each of the station and agricultural college libraries be listed and a catalogue put into the hands of all station workers.

Dr. Arthur at another time in the sessions spoke at some length concerning the exhibition that botanists might make at the coming world's (Columbian) fair, and all were glad to obtain the suggestions that the remarks developed.

The second paper was presented by Prof. G. F. Atkinson, of Alabama, upon "Anthracnose of the cotton," now quite destructive in the southern states. It was first observed by Professor Atkinson upon the leaf scars of the cotton plant, but afterwards upon the bolls.

By means of ink sketches and blackboard drawings the species of *Colletotrichum*, new and recently named by Miss Southworth *C. gossypinæ*, was fully illustrated in its structure and habits of growth. The fungus grew readily in solid cultures and was propagated with ease upon the cotyledons of seedling cotton plants. It was suggested that in many other cases inoculations might have possibly been successful had the tender cotyledons been employed in place of the more firm tissue of leaf or stem.

The same speaker presented the case of the black rust of the cotton, which is a miserable trouble due to more than one fungus. The ultimate blackness of the "rust," so called, is largely due to a *Macrosporium* or *Alternaria*, or both combined, which follow usually upon the spots that have suffered from a *Cercospora*. This is another case where a *Macrosporium* and its allies, not seeming to be able to make the primary attack, can thrive upon and spread from a spot weakened by a genuine fungus parasite. There is a "red rust," so called in North Carolina, that, while doing injury to the cotton, does not seem to be due to any infesting fungus.

One of the most profitable hours of the sessions was that devoted to the inspection of the department of botany in the university under the charge of its genial and wise chief, Dr. Burrill, who has been so long identified with the institution as to hold the well-merited position of senior professor. The herbaria, collections, library, general and special work-

rooms for students, all were full of interest, but the visitors lingered with greatest delight in that portion of the department devoted to the study of bacteria. It was a pleasure to see where many results in bacteriological science had been reached and have the methods pointed out and the apparatus, largely made at the doctor's suggestion, exhibited by a veteran in this obscure and difficult branch of practical botanical science.

Dr. Thaxter, of the Connecticut station, presented a paper accompanied with many specimens of a form of potato scab. The surface of the badly affected potatoes becomes filled with holes, and in these and upon their borders is a grayish filamentous growth due to a fungus. This fungus has been grown upon solid cultures, when it blackens the matrix and develops a lichenoid growth upon its surface. While behaving in some respects like a bacterium its structure does not permit its classification so low in the scale. Among the most interesting specimens shown were potatoes that had been inoculated with the fungus and the scab had developed in the lines touched by the virus, which lines produced in some cases the monogram of the name of the discoverer. The practical point of most interest now remaining is to determine the relation which the same fungus found upon manure bears to the scab of the tubers. It is likely that the trouble is associated with manure and similar decaying substances in the soil, and if so care must be taken in fertilizing the soil for the potato crop.

"Some new diseases" was the subject of Professor Pammel's paper, and it consisted largely of an extended list of injurious fungi as found by him during the present season at Ames, Iowa. Several species were treated at some length, such as the scab of the plum, which may be a new species. The various crops were mentioned with the most injurious diseases attending each. A *Cystopus* found upon garden beets and several other similar "finds" were reported.

While the above paper was being discussed Assistant Secretary Willits, of the U. S. Department of Agriculture, called upon the section and gave an interesting account of the botanical work being done under his charge. Men were being sent to various parts of this country and to other lands to obtain the desired information to battle against destructive agencies or to increase the much needed knowledge of our native flora. He believed in doing thorough scientific work, but with a keen eye to the practical side, so that immediate good to the farmers might result. The importance of botan-

ical work in the stations was emphasized, and he hoped to be able to assist the station botanists more and more.

Chairman Tracy assured the secretary that the warmest sympathy existed between the station botanists and the Department at Washington and stated that a great impetus had been given to botanical science in this country within the past few years.

"Fungicides" was the subject of a paper by D. G. Fairchild, of the Division of Vegetable Pathology at Washington. A history of the subject was followed by a classification of the large number of different substances employed as fungicides. The theory of fungicidal action was explained and many mixtures were named that had proved effective, and several others were shown that combined the good qualities of a fungicide, namely, effectiveness, ease of application and cheapness. These latter will be tested the coming year, and as some of them are low priced, made adhesive by the addition of molasses, and contain the required ingredients much may be expected for them.

Mr. W. B. Alwood, of West Virginia, treated of "Copper salts for the black rot." Being dissatisfied with the Bordeaux mixture he made a test of various compounds, the following proving effective: Two pounds of sulphate of copper, two and a half of lime mixed while hot, to which five gallons of water was added. Eau celeste without the ammonia also proved a satisfactory fungicide. The second part of Mr. Alwood's paper was devoted to fungicide apparatus. Many drawings were shown to illustrate the aquapult and isolateur forms of pumps. The former are best for heavy pumps and the latter for knapsack sprayers. A universal size for nozzle, screw and other fittings was recommended, and a joint committee of one member from each of the following sections, namely, botany, entomology and horticulture, was formed to consider the whole matter of uniformity of size of parts in spraying apparatus.

Dr. Thaxter exhibited a home-made spraying syringe of small cost at the close of the last session.

Professor Beal discussed "Co-operation in bulletins" and showed that much of the information obtained at one station was of equal value in other if not all states. At present a bulletin circulates only in a single state, and steps should be taken by which they may become more national. This sort of co-operation can not but lead to good results.

The subject of "Weed killing in the prairie states" was chosen by Professor Keffer, of South Dakota, who showed

that his state was peculiarly well adapted for the rapid spread of weeds by winds, live stock and the lack of diversified crops. Among the leading weeds are the mustards, wild rose, golden rods and *Salsola Kali*. The present weed law is of no avail and the hope lies in a better style of farming.

Mr. G. McCarthy, of North Carolina, considered "Seed testing and its value," and showed the importance of this work and need of co-operation. Uniform apparatus and a standard method are much to be desired.

Dr. George Vasey, of the department of agriculture, presented a paper upon grasses for arid regions which was an outline of experiments now three years in progress at Garden City, Kansas. In 1888 the experiments were started in a small way, with sods of native grasses transplanted to plowed plots. The following year larger areas and a greater variety of grasses and other forage plants were employed. Sorghums also were sown extensively. During the present season the tests have been made on a still larger scale, and while the rainfall has been much below the average the discouragement attending this has been compensated for in part by the results obtained with winter rye. Thus seventeen bushels of grain per acre were obtained during the drought, showing that the yield would have been much greater in an average season.

The following are some of the conclusions that may be drawn from the experiments: Broad leaved annuals that grow quickly, like the sorghums, may do well in an average season, but the broad leaved perennials are not valuable; grasses with strong deep roots or with bulbous bases, or both, are well adapted to an arid region. The best grasses for dry localities must be sought among the natives of such arid places. The following are some of the species particularly well adapted to our arid regions: *Panicum virgatum*, *P. bulbosum*, *Setaria caudata*, *Andropogon scoparius*, *Phalaris intermedia*, and several of the *Boutelouas*.

The secretary treated of the subject-matter of the farmer's bulletin, recommending that it be science in simple form applied to the needs of the crop-grower. The bulletin can often be made much more attractive by better press work and the use of engravings. To publish much technical science in the general bulletin both burdens the farmer and the man of science. The strictly scientific matters, as descriptions of new species, etc., that have no practical bearing to the farmer, had best be published in journals designed

for such purposes. The issuing of technical bulletins by the stations was discouraged as there are well established avenues for the publication of scientific matter in a way that all libraries, societies and interested individuals can find ready access to it.

As officers for the coming year the following were elected: For chairman, Byron D. Halsted; for secretary, Dr. Roland Thaxter.

BRIEFER ARTICLES.

Note on the nomenclature of *Uncinula spiralis* B. & C.—Burrill and Earle, in their *Parasitic Fungi of Illinois*, Part II, p. 406, have described this species under the name *Uncinula ampelopsidis* Pk., giving *U. Americana* Pk. (1872), *U. spiralis* B. & C. (1876), and *U. subfusca* B. & C. (1876) as synonyms in the order named. These authors evidently overlooked the fact that as long ago as 1857 Berkeley, in his *Introduction to Cryptogamic Botany* (p. 278, fig. 64), figured two appendages and a six spored ascus of what is undoubtedly this fungus, giving below the figure the name *Uncinula spiralis* Berkeley & Curtiss. There seems to be no good reason why we should not accept this name which is adopted by Farlow & Seymour in their *Provisional Host Index*. As the scope of the latter work forbids explanations we thought the present one might not be out of place. Accepting Berkeley and Curtiss' name, we have for the species, then, the following synonymy:

UNCINULA SPIRALIS B. & C., *Introduction to Cryptogamic Botany*, p. 278, fig. 64, 1857.

U. ampelopsidis Pk., *Trans. Albany Inst.*, Vol. VII, p. 216, 1872.

U. Americana Howe, *Erysiphei of the United States*, *Journal of Botany*, 1872.

U. subfusca B. & C., *Grev. IV.* p. 160, 1876.—B. T. GALLOWAY, *Washington, D. C.*

OPEN LETTERS.

On priority of place in biological nomenclature.

The publication of my note in the October *Journal of Botany* giving my reasons for taking up the generic name *Tissa* instead of *Buda* for the plants referred by recent authors to *Lepigonum* or *Spergularia*, and the comments thereon by the learned editor, have put my position on this question squarely on record. I was sorry to have to take the means I did in order to induce him to print my communication, but I desired that my views should be given place in an English botanical journal as well as in those of America. Mr. Britten, regarding my reasons as trivial,